

High Sensitivity, High Frequency Sensors for Hypervelocity Testing and Analysis, Phase I

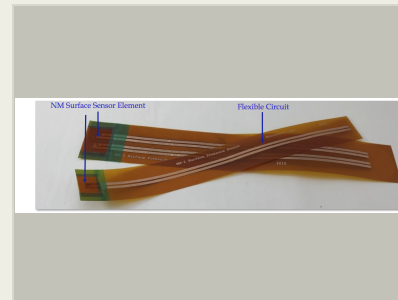
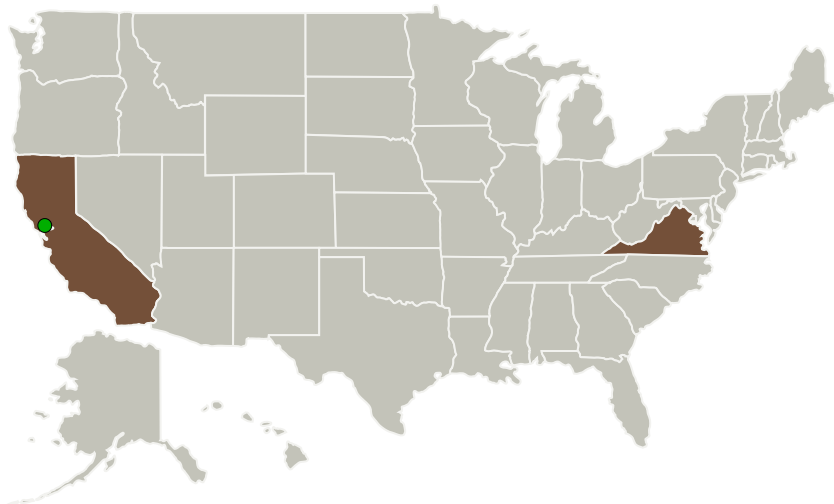
Completed Technology Project (2016 - 2016)



Project Introduction

This NASA Phase I SBIR program would develop high sensitivity, high frequency nanomembrane (NM) based surface sensors for hypervelocity testing and analysis on wind tunnel models as well as operational aerospace vehicles, using SOI NM techniques in combination with our pioneering HybridSil ceramic nanocomposite materials. Such low-modulus, conformal nanomembrane sensor skins with integrated interconnect elements and electronic devices can be applied to new or existing propulsion systems for high frequency surface pressure analysis. During this program, large continuous NMs of single crystal Si, SiGe and Ge will be readily released from the engineered wafers using wet chemical etching and transferred to flexible substrates to form multi-axis surface pressure sensors and arrays. Sensors may be connected to external support instrumentation either through thin film and ribbon cable interconnects, or potentially wirelessly using RF communication directly from electronic networks incorporated into the sensor skin material.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Nanosonic, Inc.	Lead Organization	Industry	Pembroke, Virginia
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations	
California	Virginia

Project Transitions

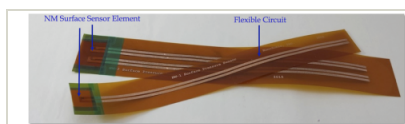
▶ **June 2016:** Project Start

✓ **December 2016:** Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/139709>)

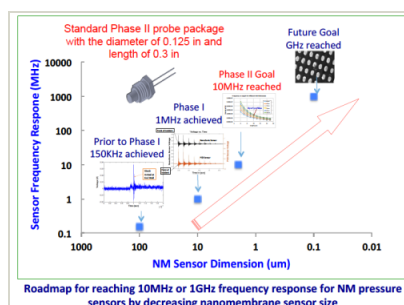
Images



Briefing Chart Image

High Sensitivity, High Frequency Sensors for Hypervelocity Testing and Analysis, Phase I

(<https://techport.nasa.gov/image/128143>)



Final Summary Chart Image

High Sensitivity, High Frequency Sensors for Hypervelocity Testing and Analysis, Phase I Project Image
(<https://techport.nasa.gov/image/135637>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Nanosonic, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

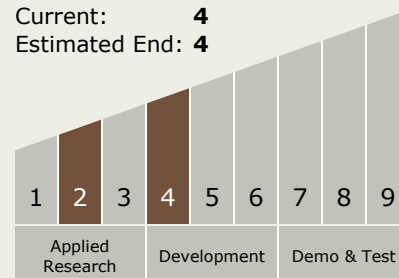
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Technology Maturity (TRL)

Start: 2

Current: 4

Estimated End: 4



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Technology Areas

Primary:

- TX09 Entry, Descent, and Landing
 - └ TX09.1 Aeroassist and Atmospheric Entry
 - └ TX09.1.2 Hypersonic Decelerators

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System